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10/082,562	02/23/2002	Christopher P. Townsend	115-002	3189

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EXAMINER

COHEN, AMY R.

ART UNIT PAPER NUMBER

2859

DATE MAILED: 07/23/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/082,562

Applicant(s)

TOWNSEND ET AL.

Examiner

Amy R Cohen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 April 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-41,43-99 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-41 and 43-99 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Claim Objections

1. Claims 3, 7, 15 are objected to because of the following informalities:

Claim 3 is objected to for depending on cancelled claim 2. Examiner considers claim 3 to be dependent on claim 1.

Claim 7, lines 1-2 "said magnetometers" lacks antecedent basis in the claims.

Claim 15, line 2, the period at the end of the claim is missing.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 83-88 are rejected under 35 U.S.C. 102(e) as being anticipated by Brann (U. S. Patent No. 6,059,576).

Brann teaches a device (10) for attaching to a living subject (18), comprising a first sensor (12), a processor (32), and a storage device (16), wherein said first sensor comprises a device for determining a curvature of the spine (Col 2, lines 42-48), wherein data from said first sensor is processed in said processor and stored in said storage device (Col 3, lines 19-30)

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wherein said first sensor, said processor and said storage device are part of a device for attaching to the living subject (Col 3, lines 19-30).

Brann teaches the device wherein said device is capable of detecting various postures based on curvature of the spine (Col 2, lines 42-62).

Brann teaches the device wherein said device is capable of detecting a kyphotic curvature of the spine or a lordotic curvature of the spine (Col 2, lines 42-62).

Brann teaches the device wherein said processor is programmed to measure the time the subject has said kyphotic curvature of the spine and determines whether said time exceeds a preset value, and wherein said processor is further programmed to prompt the subject to move if said time exceeds said preset value (Col 2, lines 34-62).

Brann teaches the device comprising a first inclination measuring device (13) for determining inclination with respect to the gravity vector and a second inclination measuring device (12) for determining inclination with respect to the gravity vector said first inclination measuring device for attaching to a first body segment above a joint (Fig. 2c), said second inclination measuring device for attaching to a second body segment below said joint (Fig. 2c) for distinguishing lying, sitting, and standing positions.

Brann teaches the device wherein the joint is the hip joint (Col 3, lines 19-62).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 3-21, 23-30, 32-41, 43-62, 64-71, 73-82, 92, 99 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hutchings (U. S. Patent No. 6,305,221) in view of Sheldon (U. S. Patent No. 5,593,431).

Hutchings discloses a device (Fig. 1) for attaching to a living subject having a joint comprising a first sensor (2, 4), a second sensor (14), a processor (64), and a non-volatile storage device (not numbered), said first sensor for attaching to a first body segment above the joint (Fig. 1), said second sensor for attaching to a second body segment below the joint (Fig. 1), wherein said first sensor and said second sensor each comprise an inclination measuring device for determining inclination with respect to the gravity vector (Col 7, lines 24-65 and Col 23, lines 15-55), wherein said inclination with respect to the gravity vector determined from said first sensor and from said second sensor is processed and stored in said non-volatile storage device (Col 23, lines 15-40 and Col 25, lines 1-28) for distinguishing lying, sitting, and standing positions, wherein said processor (64) and said non-volatile storage device (not numbered) are part of the device for attaching to the living subject (Col 25, lines 1-28).

Hutchings discloses the device wherein said inclination measuring device comprises three accelerometers orthogonally mounted (Col 23, lines 15-55).

Hutchings discloses the device wherein said inclination measuring device comprises a plurality of magnetometers (Col 4, lines 20-35).

Hutchings discloses the device wherein data from said magnetometers is for providing direction with respect to the earth's magnetic field (Col 4, lines 20-35).

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Hutchings discloses the device wherein data from said first sensor is subtracted from data from said second sensor (Col 4, lines 6-49).

Hutchings discloses the device wherein said first sensor and said second sensor are for measuring range of motion of said second body segment with respect to said first body segment (Col 25, lines 39-67 and Col 26, lines 1-15 and lines 28-45).

Hutchings discloses the device wherein data from said range of motion measurement is analyzed for change of range of motion over time (Col 4, lines 6-49).

Hutchings discloses the device wherein initial values of said time dependent data are tared out to provide change from said initial values (Col 23, lines 15-55 and Col 4, lines 6-49).

Hutchings discloses the device wherein said non-volatile storage (not numbered) device comprises a solid state device (Col 25, lines 1-28).

Hutchings discloses the device wherein said non-volatile storage device comprises a non-volatile memory chip (Col 25, lines 1-28).

Hutchings discloses the device comprising a feedback mechanism (Col 25, lines 1-28).

Hutchings discloses the device wherein said first sensor, said storage device, said processor, and said feedback mechanism are all within said housing (Col 25, lines 1-28).

Hutchings discloses the device comprising a housing separate from said first sensor and said second sensor, wherein said feedback mechanism is within said housing (Col 24, lines 14-31 and Col 25, lines 1-28).

Hutchings discloses the device wherein said first sensor and said second sensor are wirelessly connected to said housing containing said feedback mechanism (Col 24, lines 14-31).

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Hutchings discloses said device wherein said wireless connection is an RF connection (Col 24, lines 14-31).

Hutchings discloses the device wherein said feedback mechanism is activated is a preset range of motion threshold has been exceeded more than a specified number of times (Col 25, lines 39-67 and Col 26, lines 1-15 and lines 28-45).

Hutchings discloses the device wherein said feedback mechanism provides vibratory or auditory feedback (364).

Hutchings discloses the device wherein said feedback mechanism provides feedback to warn of a problem, discourage a movement, support a desired result, or encourage a movement (Col 25, lines 39-67 and Col 26, lines 1-15 and lines 28-45).

Hutchings discloses the device wherein said processor comprises a microprocessor, a signal processor, or a personal computer (Col 25, lines 1-28).

Hutchings discloses the device wherein data from said inclination determination comprises body segment inclination data as a function of time (Col 4, lines 6-49).

Hutchings discloses the device wherein data from said inclination determination is used to adjust physical therapy (Col 25, lines 39-67 and Col 26, lines 1-15 and lines 28-45).

Hutchings discloses the device wherein said device comprises a data entry system (Col 23, lines 15-55 and Col 24, lines 14-31).

Hutchings discloses the device wherein said data entry system comprises a button (on watch/display 18).

Hutchings discloses the device wherein time, date or other data are recorded when said data entry system is used (Col 25, lines 1-28).

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Hutchings discloses the device comprising a digital filter (53).

Hutchings discloses the device wherein said device may be subject to linear accelerations, wherein said digital filter is for reducing the effect of said linear accelerations on the data (Col 23, lines 41-55).

Hutchings discloses the device wherein said digital filter comprises a low pass filter or a high pass filter (Col 23, lines 41-55).

Hutchings discloses the device wherein said inclination measuring device comprises accelerometers, wherein said device comprises a high pass filter, wherein output of said accelerometers that passes through said high pass filter is subsequently integrated and used to compute resultant velocity which is used to calculate energy used (Col 23, lines 41-55 and Col 4, lines 6-49).

Hutchings discloses the device wherein said device is wearable (Fig. 1).

Hutchings discloses the device wherein said device records outputs over a series of intervals of time (Col 25, lines 1-28).

Hutchings discloses the device wherein said joint is a hip joint (Fig. 1).

Hutchings does not disclose a device wherein each sensor comprises a solid state inclination measuring device, wherein the accelerometers are specifically dc accelerometers, wherein said subtraction is to determine a difference in orientation, wherein said problem comprises repeatedly exceeding a pre-programmed inclination angle, wherein data from said inclination determination comprises posture data as a function of time, for determining posture in a sitting position, comprising a program for displaying data from said inclination determination as a histogram showing number of inclinations at each angle range during a time period, for

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displaying data as inclination v. time, wherein said feedback mechanism is activated if a preset range of motion threshold has been exceeded more than a specified number of time, wherein said problem comprises repeatedly exceeding a pre-programmed inclination angle, wherein said output comprises posture data as a function of time.

Sheldon discloses a device wherein each sensor comprises a solid state inclination measuring device (Fig. 2), wherein the accelerometers are specifically dc accelerometers (72, 74, 76), wherein said subtraction is to determine a difference in orientation (Col 4, lines 16-50), wherein said problem comprises repeatedly exceeding a pre-programmed inclination angle (Col 15, lines 18-65), wherein data from said inclination determination comprises posture data as a function of time (Col 9, lines 9-39), for determining posture in a sitting position (Col 3, lines 36-53 and Col 4, lines 36-65), comprising a program for displaying data from said inclination determination as a histogram showing number of inclinations at each angle range during a time period (Col 10, lines 3-44 and Col 16, lines 6-31), for displaying data as inclination v. time (Col 10, lines 3-44 and Col 16, lines 6-31), wherein said feedback mechanism is activated if a preset range of motion threshold has been exceeded more than a specified number of time (Figs. 4-14 and Col 4, line 25-Col 5, line 12), wherein said problem comprises repeatedly exceeding a pre-programmed inclination angle (Figs. 4-14 and Col 5, line 54-Col 6, line 5), wherein said output comprises posture data as a function of time (Fig. 15).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Hutchings to include solid state dc accelerometers and to produce signals based on the determined inclination angles and/or posture of the wearer over time, as taught by Sheldon, since dc accelerometers more accurately measure the body posture

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and activity (Sheldon, Col 4, lines 1-14) and so that the inclination angles and/or body posture could be more accurately monitored by programming signals based on the data.

6. Claims 22, 31, 63, 72, 93 rejected under 35 U.S.C. 103(a) as being unpatentable over Hutchings and Sheldon as applied to claims 1, 3-21, 23-30, 32-41, 43-62, 64-71, 73-82, 92, 99 above, and further in view of Brann (U. S. Patent No. 6,059,576).

Hutchings and Sheldon disclose the device as described above in paragraph 5.

Hutchings and Sheldon do not disclose a device wherein the device comprises a piezo-electric buzzer or electromagnetic shaker, comprising a sensor for detecting curvature of the spine, and wherein said data entry system is for recording presence of pain.

Brann discloses a device wherein the device comprises an electromagnetic shaker (Col 4, lines 22-25), comprising a sensor for detecting curvature of the spine (Col 2, lines 42-62), and wherein said data entry system is for recording presence of pain (Col 2, lines 42-62, exceeding the limit would usually indicate presence of pain or later pain).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Hutchings and Sheldon to include an electromagnetic shaker, a sensor for detecting curvature of the spine, and for determining presence of pain, as taught by Brann, so that the wearer could have another alarm signal, i.e. vibration, so that the posture of the spine could be determined in lying, sitting, and/or standing positions, and so that the device could detect presence of pain.

7. Claims 89-91, 94-98 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brann in view of Sheldon.

Brann discloses the device as described above in paragraph 3.

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Brann does not disclose the device wherein the or each sensor is a solid state inclination measuring device.

Sheldon discloses an inclination measuring device wherein the or each sensor is a solid state inclination measuring device (72, 74, 76).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the device of Brann to use solid state inclination measuring devices, as taught by Sheldon, since the solid state inclination measuring devices provide a more accurate reading of the inclination with respect to gravity (Sheldon, Col 4, lines 1-14 and lines 42-62).

Response to Arguments

8. Applicant's arguments with respect to claims 1-99 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Amy R Cohen whose telephone number is (703) 305-4972. The examiner can normally be reached on 8 am - 5 pm, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez can be reached on (703) 308-3875. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 306-3431.

ARC
July 14, 2003



Diego Gutierrez
Supervisory Examiner
Tech Center 2800